

We claim:

1. A continuously operated process for the purification by distillation of the 1,2-propylene glycol formed as by-product in the synthesis of propylene oxide, wherein the mixture formed in the synthesis which contains the 1,2-propylene glycol is separated in a dividing wall column into low-, intermediate- and high-boiling fractions and the 1,2-propylene glycol is taken off as intermediate boiler at the side offtake of the column.
- 10 2. A process as claimed in claim 1, wherein the dividing wall column comprises at least two thermally coupled columns.
- 15 3. A process as claimed in claim 1 or 2, wherein the dividing wall column has from 15 to 60 theoretical plates.
4. A process as claimed in claim 3, wherein the pressure at the top of the dividing wall column is from 5 to 500 mbar.
- 20 5. A process as claimed in claim 4, wherein the distillation temperature at the side offtake of the dividing wall column is from 50 to 200°C.
6. A process as claimed in claim 5, wherein the sum of the key components in the purified 1,2-propylene glycol is less than 1% by weight, with the sum of 1,2-propylene glycol and key components being 100% by weight.
- 25 7. A process as claimed in any of claims 1 to 6, wherein the mixture containing 1,2-propylene glycol is prepared in a process comprising at least the steps (i) to (iii):
 - 30 (i) reaction of the hydroperoxide with propylene to give a product mixture comprising propylene oxide and unreacted hydroperoxide,
 - (ii) separation of the unreacted hydroperoxide from the mixture resulting from step (i),
 - (iii) reaction of the hydroperoxide which has been separated off in step (ii) with propylene.
- 35 8. A process as claimed in claim 7, wherein an isothermal fixed-bed reactor is used in step (i), an adiabatic fixed-bed reactor is used in step (iii) and a separation apparatus is used in step (ii).

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9. A process as claimed in claim 8, wherein the hydroperoxide used is hydrogen peroxide and propylene is brought into contact with a heterogeneous catalyst during the reaction.
- 5 10. An apparatus for carrying out a continuously operated process for the purification by distillation of the 1,2-propylene glycol formed as by-product in the synthesis of propylene oxide, which comprises at least one isothermal reactor and one adiabatic reactor and also a separation apparatus for preparing propylene oxide as defined in claim 8 and at least one dividing wall column for purifying the 1,2-propylene glycol by distillation.
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